

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
27 May 2004 (27.05.2004)

PCT

(10) International Publication Number
WO 2004/043403 A3

(51) International Patent Classification⁷: A61K 9/127,
38/00, C07K 7/00, 14/00

(21) International Application Number:
PCT/US2003/036268

(22) International Filing Date:
13 November 2003 (13.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/425,821 13 November 2002 (13.11.2002) US

(71) Applicant (for all designated States except US): THE
UAB RESEARCH FOUNDATION [US/US]; AB 1120
G, 1530 3rd Avenue South, Birmingham, AL 35294-0111
(US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): ANAN-
THARAMIAH, Gattadahalli, M. [US/US]; 3798
Carisbrooke Drive, Birmingham, AL 35226 (US). GAR-
BER, David, W. [US/US]; 1718 14th Terrace South,
Birmingham, AL 35205 (US). DATTA, Geeta [—/—];
118 Crestmont Lane, Pelham, AL 35124 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
15 December 2005

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

WO 2004/043403 A3

(54) Title: SYNTHETIC SINGLE DOMAIN POLYPEPTIDES MIMICKING APOLIPOPROTEIN E AND METHODS OF USE

(57) Abstract: The present invention is directed to a synthetic apolipoprotein-E mimicking polypeptide consisting of a single do-
main. The invention is also directed to nucleic acid encoding the polypeptide, vectors including the nucleic acid, antibodies specific
for the polypeptide, and compositions comprising the same and methods of using the same.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US03/36268

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 9/127, 38/00; C07K 7/00, 14/00
 US CL : 424/430; 530/300; 514/2

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/430; 530/300; 514/2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DATTA, G. et al. Cationic domain 141-150 of apoE covalently linked to a class A amphipathic helix enhances atherogenic lipoprotein metabolism in vitro and in vivo. Journal of Lipid Research 2001 Vol. 42, pages 959-966, especially Abstract, and Materials and Methods sections, Synthesis of peptides.	1-8, 14-17, 19, 27, 31-34
Y	ZAIOU, M. et al. Apolipoprotein E-low density lipoprotein receptor interaction: influences of basic residue and amphipathic alpha helix organization in the ligand. Journal of Lipid Research 2000 Vol. 41, pages 1087-1095, especially Materials and Methods section, Overexpression of apoE in Escherichia coli, and Preparation of apoB3-22 kDa-DMPC complexes.	1-8, 14-17, 19, 27, 31-34
Y	US 6,514,523 B1 (SPARKS) 4 February 2003 (04.02.2003), Abstract, column 3, line 1 through column 4, line 40.	1-8, 14-17, 19, 27, 31-34
A	GIANTURCO, S. et al. Receptor-mediated uptake of hypertriglyceridemic very low density lipoproteins by normal human fibroblasts. Journal of Lipid Research 1982 Vol. 23, pages 984-993, especially Abstract	1-8, 14-17, 19, 27, 31-34

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

Special categories of cited documents:

- "A" documents defining the general state of the art which is not expected to be of particular relevance
- "B" earlier application or patent published on or after the international filing date
- "C" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "D" document referring to an oral disclosure, use, exhibition or other means
- "E" document published prior to the international filing date but later than the priority date claimed

- "F" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "G" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "H" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "I" document member of the same patent family

Date of the actual completion of the international search

16 September 2003 (16.09.2003)

Date of m

17 NOV 2003

Name and mailing address of the ISA/US

Mail Stop PCT, AUST ISA/US
 Commissioner of Patents
 P.O. Box 1400
 Alexandria, Virginia 22313-1400

Facsimile No. (703) 305-3230

Authorized Officer

Anand Desai

Telephone No. (571) 272-0947

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

PCT/US03/36268

Continuation of B. FIELDS SEARCHED Item 3:

SCISEARCH, MEDLINE, BIOSIS, EMBASE, CAPLUS, PASCAL; search terms: apolipoprotein E, binding domain, lipoprotein metabolism, LDL binding domain

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US03/36268

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows.
See PCT FORM 206 mailed August 8, 2005

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-8, 14-17, 19, 27 and 31-34

Remark on Protest

☐
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.



P.B.5818 - Patentlaan 2
2280 HV Rijswijk (ZH)
☎ (070) 3 40 20 40
FAX (070) 3 40 30 16

Europäisches
Patentamt

European
Patent Office

Office européen
des brevets

Generaldirektion 1

Directorate General 1

Direction générale 1

Hammler, Martin Franz
Phillips & Leigh
5 Pemberton Row
London EC4A 3BA
GRANDE BRETAGNE



EPO Customer Services

Tel.: +31 (0)70 340 45 00

Date

19-08-2005

Reference
FP-10-0044

Application No./Patent No.
03783409.0 - 2108

Applicant/Proprietor
THE UAB RESEARCH FOUNDATION

Ref.: Your payment of 02.08.05

We wish to draw your attention to the following:

Following the Decision of the administrative Council of 09.12.04 (OJ EPO 1/2005, 5) the amounts due for the European search fee and examination fee have been amended with effect from 01.07.05.

The new amounts of the European and supplementary European search fee and of the examination fee apply to European patent applications and Euro-PCT applications derived from international applications filed on or after 01.07.05.

Since the present application was filed before 01.07.05, the old amounts apply.

In addition the international search report has not been published yet, therefore the designation and examination fee were not due on entering the European phase. With regard to your payment of 02.08.05 any overpaid amount will be refunded.

RECEIVING SECTION

Block, Helga



Registered letter
EPO Form 2901 11.93 16.08.05

to EPO postal service: 16.08.05
AB92508